

PHILIPPINE FERN NOTES

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These alphabetically arranged notes consist of new species, new combinations, range extensions, or new reductions to synonymy involving the Philippine fern flora; ten of the 31 notes concern species of *Diplazium*. I have inserted reference to Copeland's 1958–61 *Fern Flora of the Philippines* where appropriate, but have otherwise limited the synonymies to only those references of greatest utility. The Philippine pteridophyte flora is exceedingly rich, with over 1000 species already documented, and many additional discoveries are still expected.

Adiantum setulosum J. Sm., Bot. Mag. 72 Comp. 22. 1846.

A. diaphanum auct. non Bl.: Copel., Fern Fl. Philip. 1: 162. 1958; Shieh in DeVol et al., Flora of Taiwan 1: 305. 1975; Brownlie, Pterid, Fl. Fiji 192. 1977; Goudey, Maidenhair Ferns 70. 1985.

All plants from Java, the source of Blume's type of *A. diaphanum*, have glabrous indusia. Philippine plants so-named, with indusia setulose, rachis glabrous, sterile pinnule teeth bluntly rounded, and lamina hairs acicular and dark are properly called *A. setulosum* J. Sm., described from Norfolk I., and ranging from Vietnam and S. China to Fiji, New Zealand, and Australia.

Arthropteris wollastonii (Ridl.) Holtt., Blumea 14: 229. 1966.

A. orientalis auct. non (Gmel.) C. Chr.: Copel., Fern Fl. Philip. 1: 190. 1958.

This species has only been known in the Philippines by two collections from Mindanao, Zamboanga del Sur, San Ramon: *Copeland 1712* and *Copeland PPE 155*. However, it has now been collected in four other islands, which extends its range over 1200 km to the North.

ADDITIONAL SPECIMENS: Leyte, Oct 1914, *Wenzel 20* (BKL, F); Negros Oriental, Amlan, creeping on vertical face of shaded side of enormous boulder near river, 700 m, May 1973, *Price 2461*; Luzon, Kalinga-Apayao, Calanasan, 800 m, May 1974, *Price 2946*; Western Samar, Matuguinao, Mt. Sinogbungan, 650–900 m, terrestrial and scandent, Jul 1975, *Price & Hernaez 698*.

With an elevation of ca. 900 m, Sinogbungan is the highest mountain in Samar, and this is the commonest fern, by far, in its uppermost 250 m.

Asplenium affine Sw.; Copel., Fern Fl. Philip. 3: 445. 1961; Sledge, Bull. Brit. Mus. Bot. 3: 269. 1965.

A. spathulinum J. Sm. ex Hook., Sp. Fil. 3: 170. 1860, non Kunze (1848); Copel., Fern Fl. Philip. 3: 445. 1961.

A. gracilifolium Copel., Philip. J. Sci. 4C: 113. 1909.—TYPE: Luzon, Mt. Banahaw, epiphytic on mossy trunks, 1650–2200 m, 5 Jan 1909, *Copeland 2123* (holotype lost in 1945 at PNH; lectotype, here designated: MICH!).

The name *A. gracilifolium* was omitted from Copeland's *Fern Flora of the Philippines* and has never received a modern interpretation. Examination of the lectotype reveals that it is a small specimen of *A. affine*, precociously fertile and prolific, paleae on rhizome and gemmae blackish, not castaneous as described, with fertile fronds as small as 12×1.7 cm. The type of *A. spathulinum* J. Sm. ex Hook. is also from Mt. Banahaw.

Asplenium persicifolium J. Sm. ex Mett.; Copel., Fern Fl. Philip. 3: 441. 1961.

A. tripinnatifidum Copel., Philip. J. Sci. 46: 215. 1931; Fern Fl. Philip. 3: 443. 1961.—TYPE: Luzon, Rizal Prov., Apr 1913, *Loher 14379* (holotype: UC!).

The finely dissected single specimen of *A. tripinnatifidum* is here interpreted as a monstrous individual of the usually once-pinnate *A. persicifolium*, with which it agrees in color, scales, axes, indusia, prolifery, and tendency to fragment when dry. The cutting is irregular, adding further support to considering it an aberrant plant not meriting nomenclatural recognition.

Cephalomanes crassum (Copel.) Price, comb. nov. *Trichomanes crassum* Copel., Philip. J. Sci. 51: 256, *pl.54, 55, f.3.* 1933; Fern Fl. Philip. 1: 78. 1958.—TYPE: Leyte, Cabalian, May 1922, *G. Lopez BS 40804* (holotype lost in 1945 at PNH; lectotype, here designated: MICH!; isolectotype: US!).

Copeland described this unusual species from a single sterile collection and noted that only so very distinct a fern would merit naming without being fertile. This note is to report a second and fertile collection from the island of Samar, Prov. of Western Samar, Matuguinao, 450 m, terrestrial on embankment in damp shaded ravine, 9 July 1975, *Price & Hernaez 806*. The fronds are bluish green, the sterile in a basal rosette, the fertile erect and narrow, to 25×1 cm, with many small crowded lobes each consisting of basal laminar tissue and up to 9 marginal sori strongly deflexed revolutely. As in sterile fronds, the fertile have a conspicuously winged rachis.

In *Acta Phytotax. Geobot.* 35: 165–179. 1984, Iwatsuki reorganized Hymenophyllaceae to comprise eight genera, an arrangement here followed. Although his genus *Cephalomanes* is defined in a new much-enlarged sense, *C. crassum* would belong in *Cephalomanes* in even the strictest sense.

Cyclopeltis crenata (Fée) C. Chr., Ind. Fil. Suppl. 3: 64. 1934; Ching, *Icon. Fil. Sin.* 3: *pl.128.* 1935; Holtt., *Ferns of Malaya* 527, *t.309.* 1955.

C. zamboangana Copel., Philip. J. Sci. 81: 21. 1952; Fern Fl. Philip. 2: 250. 1960.—TYPE: Mindanao, Zamboanga del Sur, San Ramon, 300 ft, 27 Nov 1904, *Copeland 1549* (holotype: MICH!).

Cyclopeltis crenata is widespread in the Philippines but was not recognized as distinct by Copeland until he described it as *C. zamboangana*. The original publication wrongly states that the type was *sine numero*. However, *Copeland 1549* was a mixed collection: the specimen of that number at US is *C. presliana* (J. Sm.) Berk., syn. *C. cumingiana* (Fée) Ching. The two Philippine species also grow together elsewhere as on Mt. Makiling, Laguna, Luzon. A possible hybrid between the two is represented by: Luzon, Cagayan Prov., Abulug R., Jan 1912, *Weber 1547* (CM, F,

MICH, NY, US) and *Ramos BS 13829* (MICH); the two collectors obviously botanized together.

Cyrtomium fortunei J. Sm., *Ferns Brit. & Foreign* 286. 1866; Ching, *Icon. Fil. Sin.* 3: *pl.126*. 1935; Shing, *Acta Phytotax. Sin. Add.* 1: 24. 1965.

The genus *Cyrtomium*, common in S. China, has been reported twice from the Philippines, both mentioned under *Phanerophlebia* by Copel., *Fern Fl. Philip.* 2: 248. 1960. One collection, small and sterile, is: Luzon, Benguet, Mt. Santo Tomas, 7000 ft, Dec 1905, *Mearns 38* (US). At my request, Dr. K. H. Shing, who published a revision of *Cyrtomium* in *Acta Phytotax. Sin. Add.* 1: 1–48. 1965, kindly examined this specimen and determined it as *C. fortunei* J. Sm., here first reported from the Philippines.

Davallia solida (Forst.) Sw.; Copel., *Fern Fl. Philip.* 1: 173. 1958.

D. elmeri Copel., *Leafl. Philip. Bot.* 9: 3107. 1920; *Fern Fl. Philip.* 1: 174. 1958; Holtt., *Kew Bull.* 27: 239. 1972.—TYPE: Luzon, Sorsogon, Mt. Bulusan, Jun 1916, *Elmer 16234* (holotype lost in 1945 at PNH; lectotype, here designated: US!; isotype: K).

D. robinsonii Copel., *Philip. J. Sci.* 30: 326. 1926; *Fern Fl. Philip.* 1: 173. 1958.—TYPE: Mindanao, Cotabato, Jun 1910, *Robinson BS 11704* (holotype: MICH!).

Davallia elmeri was first noted by Holttum to be only a hairy young individual of *D. solida*. Another name based on a single collection is *D. robinsonii*, which I now interpret as merely a shade form of the same species.

Diplaziopsis formosana (Rosenst.) Price, comb. nov. *Diplazium formosanum* Rosenst., *Hedw.* 56: 337. 28 Jul 1915. *Dictyodroma formosana* (Rosenst.) Ching, *Acta Phytotax. Sin.* 9: 60, *pl.5, f.1-8*. 1964; DeVol & Kuo, *Flora of Taiwan* 1: 459, *pl.163*. 1975.—TYPE: China, Taiwan, Mt. Urai, Apr 1914, *Faurie 188* (isotype: MICH!).

Although frequently collected in Taiwan, the island for which it was named, this species was unknown in the Philippines until its recent discovery in Mindoro Occidental, ca. 13°N 121°E, ca. 1500 m, on wet embankment in forest, 1 Jan 1987, *Price 4631*. It has been most recently assigned to *Dictyodroma* Ching, but that genus is clearly synonymous with *Diplaziopsis* C. Chr. The Himalayan type of *Dictyodroma* differs from *D. formosana* by only rachis more scaly and pinnae less adnate; it should be known as ***Diplaziopsis heterophlebia*** (Mett. ex Hook & Bak.) Price, comb. nov. (basonym: *Asplenium heterophlebium* Mett. ex Hook. & Bak., *Syn. Fil.* 243. 1867).

Also inseparable from *Diplaziopsis* is the monotypic North American genus *Homalosorus* Small ex Pic. *Ser., Webbia* 31: 246. 1977, which was shown by Kato & Darnaedi, *Amer. Fern J.* 78: 77–85. 1988, to be intimately related to an east Malesian fern of this alliance. The sole species of *Homalosorus* must accordingly be called ***Diplaziopsis pycnocarpa*** (Spreng.) Price, comb. nov. (basonym: *Asplenium pycnocarpon* Spreng., *Anleit Kennt. Gew.* 3: 112. 1804).

From *Diplazium*, *Diplaziopsis* differs by rhizome and roots not black, not

sclerified, paleae brown, concolorous, not toothed, rachis groove V-shaped, not open to grooves of costae of basal pinnae, lamina simple to once-pinnate, margins not differentiated, marginal cells large, hyaline, texture membranaceous when dry, veins anastomosing with numerous areoles (but not goniopteroid) or free and then the veinlets approaching the sinuses of marginal crenulations. The total absence of sclerenchyma from the plant body is a very conspicuous character.

Diplazium calliphyllum (Copel.) Price, comb. nov. *Athyrium calliphyllum* Copel., Philip. J. Sci. 40: 303, pl.6. 1929; Fern Fl. Philip. 3: 393. 1961.—TYPE: Mindanao, Mt. Matutum, 1 May 1917, *Copeland s.n.* (holotype: MICH!; isotype: UC!).

Diplazium ciliatum Price, sp. nov.

Fig. 1A, B.

Diplazio doederleinii (Luerss.) Mak. simile, sed rhizomate erecto, paleis amplioribus, atrantibus, pinnulis segmentisque angustioribus, indusiis ciliatis praecipue differt.

Caudex erect, to at least 7 cm high, 2.5 cm thick including old stipe bases. Paleae ca. 12×1 mm, blackish, black with a scattering of brown cells, or sometimes brownish, margins with small well-spaced frequently retrorse teeth. Stipe to 60 cm long, thickened, paleate, and blackish at base, upwards stramineous or brown, not spiny or muricate. Lamina bipinnate plus pinnatifid, ovate-deltoid, acuminate, to about 95×60 cm, basal pinnae just slightly shorter than succeeding, all pinnae alternate or only the basal pair subopposite. Rachis and rachillae papillose inside grooves. Pinnae lanceolate, largest 38×15 cm, acuminate, basal pinnules slightly reduced, \pm opposite except pinnules of basal pinnae where the acroscopic pinnule is very much closer to rachis. Pinnules lanceolate, to 9×2.3 cm, stalked 2 mm to sessile, gradually tapering to the acuminate apex, cut $\frac{1}{2}$ to $\frac{5}{6}$ to costa into subtruncate or broadly rounded segments. Segments (3–) 4–6 (–8) mm broad, sharply serrulate, a vein entering each tooth. Color olive-brown, texture thin papyraceous. Sori subcostular, commonly 2 mm, up to 4 mm long. Indusia thin, sublathrate, brownish, margins long-ciliate, reflexing early, fragile, fragmenting irregularly and disappearing.

TYPE: Luzon, Ilocos Norte, Mt. Burnay, ca. 1300 m, 6 Dec 1975, *Price 3396* (holotype: MICH!).

PARATYPES: Luzon, Kalinga-Apayao, Calanasan, $120^{\circ}57'E$, $18^{\circ}08'30"N$, 1400 m, 16 May 1974, *Price 2970*; Ilocos Norte, Nueva Era, Mt. Siminublan, 27 Nov 1975, *Price 3340*, *Iwatsuki et al. P-374*; Banna, Mt. Bubonbilit, ca. 1700 m, 2 Dec 1975, *Price 3354*, *Iwatsuki et al. P-554*; Mt. Burnay, ca. 1900 m, 5 Dec 1975, *Price 3388*, *Iwatsuki et al. P-773*.

Ecology: Occasional in light, open, seasonally dry forest at elevations from ca. 1000 to 1900 m. Endemic to northwestern Luzon.

Diplazium ciliatum is similar to *D. doederleinii* (Luerss.) Mak. of Taiwan [synonym: *Athyrium irayense* Copel., Philip. J. Sci. 81: 39. 1952; Fern Fl. Philip. 3: 399. 1961.—TYPE: Batan I., Mt. Iraya, 2300 ft, 17 Apr 1930, *Ramos BS 80153* (holotype: MICH!; isotype: NY!)] which, however, differs by rhizome short-creeping, paleae paler and smaller, pinnules broader, less deeply cut, abruptly narrowing at apex after being parallel much of their length, segments broader, rounded, not toothed, indusia allantoid, non-ciliate.

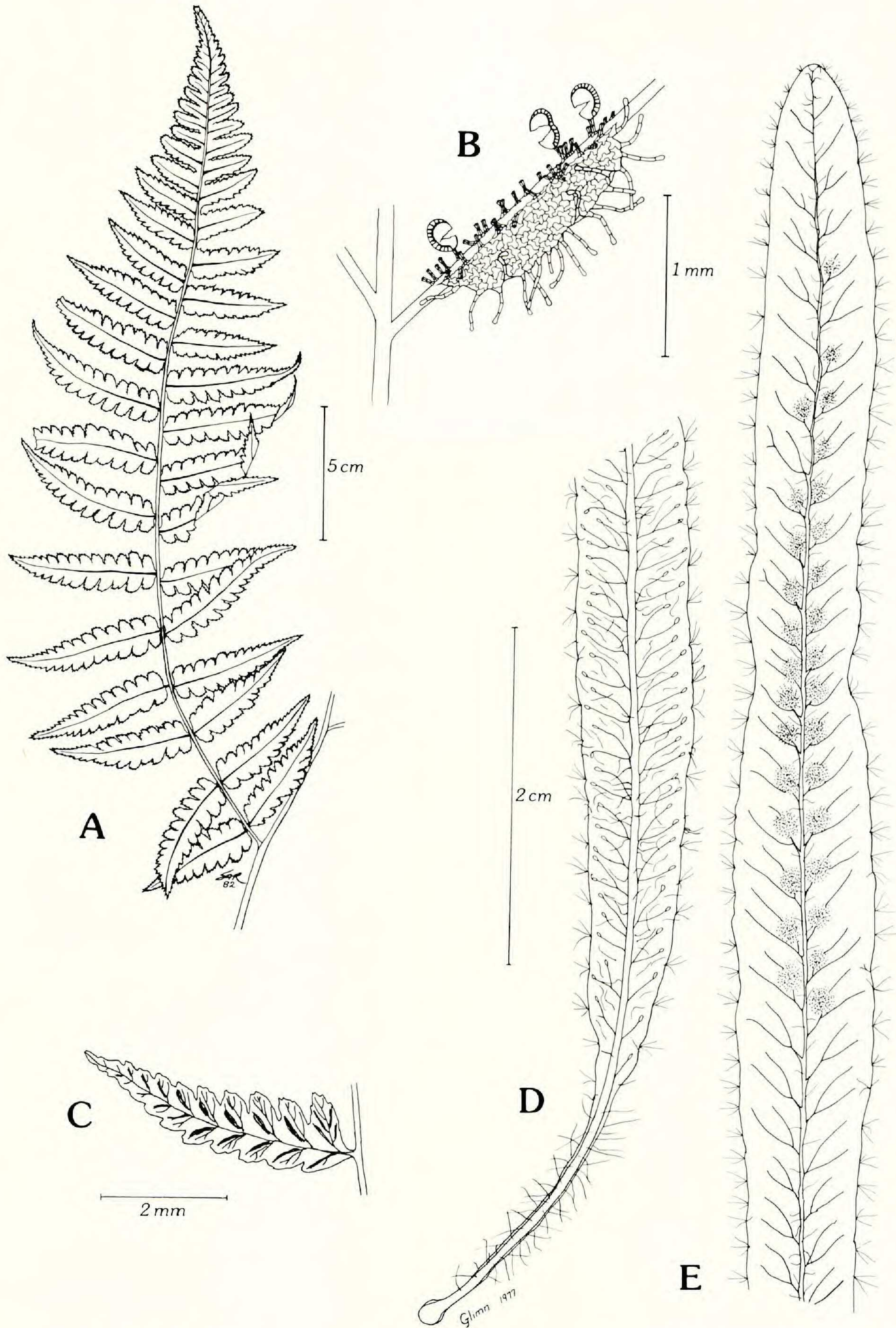


FIG. 1. *Diplazium ciliatum*, *Diplazium pinatubicum*, and *Grammitis oncobasis*. *Diplazium ciliatum* (Price 3396): A. Outline of middle pinna. B. Sorus. *Diplazium pinatubicum* (Elmer 22128): C. Middle pinna. *Grammitis oncobasis* (Price 3376): D. Frond base showing adaxial surface. E. Frond apex showing abaxial surface.

Diplazium cordifolium Bl., Enum. Pl. Javae 190. 1828. *Athyrium cordifolium* (Bl.) Copel.; Fern Fl. Philip. 3: 416. 1961.

A. parvum Copel., Philip. J. Sci. 81: 41. 1952; Fern Fl. Philip. 3: 417. 1961.—
TYPE: Catanduanes, Dakilang Patag, 2000 ft, 20 Aug 1928, Ramos & Edaño BS 75652 (holotype: MICH!; isotypes NY! UC!).

Diplazium cordifolium is an especially variable species in a genus of variable species, and *Athyrium parvum* merely represents diminutive precociously fertile plants not distinct in any characters other than size. In addition to the type of *A. parvum* and the one paratype: Luzon, Laguna, Feb 1910, Curran FB 19264 (MICH), I have myself collected even a tinier plant, with a fertile lamina only 3 × 1.2 cm bearing six sori (Negros Oriental, Amlan, 600–800 m, 16–17 May 1973, Price 2581), and am certain that all are miniature *D. cordifolium*.

Diplazium griffithii Moore, Ind. Fil. 330. 1861. *Asplenium griffithii* (Moore) Baker, Syn. Fil. 239. 1867. *Athyrium griffithii* (Moore) Milde, Bot. Zeit. 1870: 354. *Allantodia griffithii* (Moore) Ching, Acta Phytotax. Sin. 9: 52. 1964.—
TYPE: India, Assam, Griffith s.n. (n.v.; Moore's description agrees fully with specimens distributed as *D. griffithii* collected in Assam, Khasi Hills, Serareem, 5000 ft, Jun & Jul 1889, Gustav Mann s.n. (MICH, MO) and I accept them as representative).

Athyrium platyphyllum Copel., Philip. J. Sci. 3C: 292. 1908 (non *Diplazium platyphyllum* Christ, 1906); Fern Fl. Philip. 3: 400. 1961. *D. latifrons* v. A. v. R., Mal. Ferns Suppl. 1: 271. 1917; Iwats. & Price, S. E. Asian Studies 14: 565. 1977. *D. mearnsii* Hieron., Hedw. 59: 338. 1918; C. Chr., Ind. Fil. Suppl. 3: 75. 1934.—TYPE: Luzon, Mt. Data, 29 Oct 1905, Copeland s.n. (holotype: MICH!).

D. maximum var. *formosanum* Rosenst., Hedw. 56: 337. 1915 ('*formosana*').—
TYPE: China, Taiwan, Mt. Urai, Faurie 178 (lectotype, here designated: MICH!). Rosenstock also cited: Taiwan, Mt. Shinten, Faurie 170 (MICH!).

D. petrii Tardieu, Asplen. Tonkin 67, 181, pl. 9, f. 1-2. 1932 ('*petrii*'); DeVol & Kuo, Flora of Taiwan 1: 467. 1975; Nakaike, Enum. Pterid. Jap. 164. 1975. *Athyrium petrii* (Tardieu) Ohwi, Fl. Jap. Pterid. 127. 1957. *Allantodia petrii* (Tardieu) Ching, Acta Phytotax. Sin. 9: 53. 1964.—TYPE: Vietnam, Tonkin, Chapa, Colani 1990 (lectotype, here designated: MICH!). Tardieu listed eight syntypes.

D. triangulare Tag., Acta Phytotax. Geobot. 7: 79. 1938.—TYPE: Japan, Yakushima, Mt. Nagata-dake, Tagawa 699 (n.v.; the reduction to *D. petrii* made by Tagawa himself, Col. Ill. Jap. Pterid. 202. 1959).

D. agyokuense Tag., Acta Phytotax. Geobot. 7: 80. 1938.—TYPE: China, Taiwan, Prov. Taihoku, Bunzan-gun, Tagawa 179 (isotype: MICH!).

The distinguishing characters of *D. griffithii* are: rhizome short-creeping, horizontal, stipe bases ascendingly curved, black, with glossy blackish finely toothed paleae, upwards and rachis light brown; lamina at base bipinnatifid to tripinnatifid, lanceolate to broadly ovate-deltoid, drying very dark above, olivaceous below; basal pinnae long-stalked; grooves of rachis and costae short-thick hairy within, a few narrow paleae at junctions and along minor axes; indusium brown, subentire at first, margin erose.

The range of *D. griffithii* is from the Himalayas to S. Japan and Mindanao, but it has not been previously reported by name from the Philippines. Undoubtedly it constitutes a complex that may ultimately be sorted into several varieties or subtle species.

Diplazium irigense (Copel.) Price, comb. nov. *Athyrium irigense* Copel., Philip. J. Sci. 81: 38. 1952; Fern Fl. Philip. 3: 394. 1961.—TYPE: Luzon, Camarines Sur, Mt. Iriga, Dec 1913, *Ramos BS 22189* (holotype: MICH!; isotype: US!).

Although described as exindusiate, the type specimen has thin, brown, narrow, long-ciliate indusia.

Diplazium macrosorum (Copel.) Price, comb. nov. *Athyrium macrosorum* Copel., Leaf. Philip. Bot. 3: 815. 1910; Fern Fl. Philip. 3: 402. 1961.—TYPE: Mindanao, Mt. Apo, Maramag Creek, Aug 1909, *Elmer 11569* (holotype: MICH!; isotypes: NY! US!).

Diplazium pinatubicum Price, sp. nov.

Fig. 1C.

Diplazio elmeri (Copel.) C. Chr. proxime affine, sed lamina minore, unipinnata, soris indusiatis potissimum distinguendum. A *D. whitfordii* Copel. rhizomate erecto, paleis castaneis, nigrimarginatis, dentatis, pinnis asymmetricis, basiscopice angustatis recedit. *D. williamsii* Copel. paleas concoloras fuscas, pinnas minores, indissectas (basales interdum exceptas) habet.

TYPE: Luzon, Pampanga, Mt. Pinatubo, May 1927, *Elmer 22128* (holotype: MICH!; isotypes: GH! NY! UC!). This collection was cited by Christensen in Leaf. Philip. Bot. 9: 3154. 1933 as *Athyrium williamsii* (Copel.) Copel. with the following field note: "Clumps in wet ground of humid woods near the bottom of a cliff . . ." Paratype and only other known collection: Luzon, Tarlac, Iba-McDonnell Road, Apr 1906, *Boyce 13* (MICH). *Boyce 13* was cited by Copeland, Fern Fl. Philip. 3: 393. 1961 as doubtfully belonging to *Athyrium banahaoense* Copel., which I below reduce to *D. williamsii* Copel.

Diplazium subsinuatatum (Wall. ex Hook. & Grev.) Tag., Col. Ill. Jap. Pterid. 203, f.298. 1959; Price, Kalikasan 1: 42. 1972. *Asplenium subsinuatatum* Wall. ex Hook. & Grev., Icon. Fil. t.27. 1827.

Athyrium lanceum (Thunb.) Milde (1870, non Moore 1860); Copel., Philip. J. Sci. 7C: 55. 1912. *Diplazium lanceum* (Thunb.) Presl, Tent. Pterid. 113. 1836 (non Bory 1833).

Athyrium dubium (Don) Ohwi (1956, non Ching 1949); Copel., Fern Fl. Philip. 3: 412. 1961; non *Diplazium dubium* Link (1833).

Long known from the Philippines by only a single collection from extreme northwestern Luzon, *D. subsinuatatum* has recently been found in the island of Panay over 750 km to the south, a substantial disjunctive range extension. The Panay specimens are uniformly small, with fully fertile lamina 3–9 cm long by 0.5–1 cm broad, but differ in no qualitative way. The lanceolate simple lamina and slender long-creeping branched rhizome with blackish entire paleae immediately distinguish this from other diplazia.

PHILIPPINE SPECIMENS: Luzon, Ilocos Norte, Mar 1909, *Ramos BS 7761* (MICH); Panay, Antique, W slope of Mt. Madyaas, forming a loose groundcover in moist shaded depression at ca. 900 m, Jan 1987, *Price 4667*.

Diplazium tomentosum Bl., Enum. Pl. Javae 192. 1828.

In his classic paper on fern ecology, Copeland listed one of his collections as a species near *D. tomentosum* but of doubtful identity (Philip. J. Sci. 2C: 4. 1907) and wrote "prob. new" on the label in his herbarium. This name fails to appear anywhere else in the literature as pertaining to the Philippines, but Copeland's original guess was correct, and this collection: Mindanao, Zamboanga del Sur, San Ramon, 1800–2000 ft, 5 Mar 1905, *Copeland 1667* (MICH, NY) is the only one from the Philippines of this species, which also occurs in Borneo, Sumatra, Malaya, and Thailand. For a modern description, see Holtt., Ferns of Malaya 551, f.324. 1955. The copious multiseptate hairs, ca. 0.4 mm long, on rachis and costae below, are distinctive.

Diplazium williamsii Copel., Philip. J. Sci. 1 Suppl. 150, pl.7. 1906. *Athyrium williamsii* (Copel.) Copel., Philip. J. Sci. 3C: 297. 1908; Fern Fl. Philip. 3: 383. 1961.

Athyrium banahaoense Copel., Philip. J. Sci. 38: 139. 1929; Fern Fl. Philip. 3: 392. 1961. *Diplazium banahaoense* (Copel.) C. Chr., Ind. Fil. Suppl. 3: 72. 1934.—TYPE: Luzon, Laguna, Mt. San Cristobal, 1800 m, 17 May 1908, *Copeland s.n.* (holotype: MICH!).

With the reduction of *D. banahaoense*, *D. williamsii* is now known to range from northernmost Luzon (Kalinga-Apayao, Calanasan, 800 m, May 1974, *Price 2942*) to SW Mindanao, virtually throughout the Philippines, to which it is endemic.

Dryopteris cacaina Tag., Acta Phytotax. Geobot. 6: 155. 1937.

Described from Taiwan, this species belongs in the group of *D. sparsa*, *Dryopteris* sect. *Nephrocystis* (Fraser-Jenkins, Bull. Brit. Mus. Bot. 14: 198. 1986); under *D. sparsa* I noted a specimen as having a dark stipe and rachis in Gard. Bull. Sing. 30: 244. 1977. It has now been collected twice in the Philippines: Luzon, Benguet, Mt. Santo Tomas, 27 May 1970, *Price 1042* (CAHUP, MICH) and Mt. Data, 5 Feb. 1982, *B. F. Hernaez 3746* (CAHUP), the latter kindly brought to my attention by D. B. Tolentino. In addition to the shiny blackish stipe and maroon rachis, Dr. M. Kato (in litt.) diagnoses the species by the rounded pinnules and costular sori.

Grammitis oncobasis Price, sp. nov.

Fig. 1D, E.

Grammitidi jagoriana (Mett. ex Kuhn) Copel. similis sed basibus stipitum bulbosis, stipite laminaeque semper longiores, setis stipitis multo longioribus, laminis infra inter costam et marginem glabris, soris non elongatis, sporangiis spisse setulosis differt.

Rhizome short ascending, paleae to 4×1 mm, lanceolate, subentire, pale brown, non-clathrate. Stipe 6–33 mm long, 0.5 mm thick, base bulbous, bearing numerous solitary slender maroon setae to 2 mm long. Lamina to 14 cm \times 8 mm, tapering to both ends, papyraceous, margins entire, bearing fasciculate maroon setae 0.6–1.2 mm long, in fascicles of (1–) 3 (–5). Setae on upper surface 1–2 mm

long, solitary, scattered on laminar surface and costa. Beneath, setae restricted to costa, 0.6–1.2 cm long, solitary or 2-fasciculate. Veins mostly once-forked, the basiscopic branch sometimes forked again, all ending in hydathodes. Sori numerous, borne near costa at base of acroscopic vein branch, orbicular, not embossed. Sporangia each with 3 maroon setulae (2 on one side) ca. 0.3 mm long on jacket near apex. Spores trilete, globose, brown, finely and evenly tuberculate.

TYPE: Luzon, Ilocos Norte, Mt. Burnay, 1950 m, 3–5 Dec 1975, *Price 3376* (holotype: MICH!).

PARATYPES: Luzon, same locality as type, *Iwatsuki et al. P-742, P-822*; Mountain Prov., Mt. Polis, 24 May 1969, *Price 424a*; Zambales, near Palauig, High Peak, 2000 m, 10 Nov 1973, *Price 2847*.

Ecology: Epiphytic on mossy branches in the vicinity of 2000 m. Endemic to northern Luzon.

In Copeland's monograph of *Grammitis*, *Philip. J. Sci.* 80: 225. 1952, and in his *Fern Flora of the Philippines* 3: 517. 1961, this species will key out to *G. jagoriana*, which is apparently a close relative. However, *G. jagoriana* never has swollen stipe bases and is a substantially smaller species, differing in details of the distribution and abundance of setae, and often has elongate sori.

Leucostegia pallida (Mett. ex Kuhn) Copel.; *Fern Fl. Philip.* 1: 168. 1958.

In the Philippines this species has been reported from only Mindanao, but I have collected it in three other islands, which extends its range over 700 km: Samar, Prov. Western Samar, Gandara, 22 Apr 1975, *Price & Hernaez 153*; Negros, Prov. Negros Oriental, Amlan, 16–17 May 1973, *Price 2496*; Luzon, Sorsogon, Mt. Bulusan, 27 Dec 1971, *Price 1888*.

Microsorium pteropus (Bl.) Copel.; *Fern Fl. Philip.* 3: 480. 1961.

Polypodium bolsteri Copel., *Philip. J. Sci.* 1 Suppl. 257, *pl.4A*. 1906. *Colysis bolsteri* (Copel.) Copel., *Fern Fl. Philip.* 3: 489. 1961.—TYPE: Mindanao, Surigao, Apr 1906, *F. H. Bolster s.n.* (holotype lost in 1945 at PNH; lectotype, here designated: MICH!).

Polypodium bolsteri is merely an entire-fronded individual of *M. pteropus*. Although *C. bolsteri* was reported from Brunei and Sarawak by Tagawa, *Acta Phytotax. Geobot.* 22: 187. 1967, and from Indonesian Borneo by v. A. v. R., *Bull. Jard. Bot. Buitenz.* II, 16: 31. 1914, I strongly suspect these were due to collections of true *Colysis* spp. rather than *M. pteropus*. An additional synonym of *M. pteropus* is *M. brassii* Copel., *J. Arnold Arb.* 10: 181. 1929, from Papua, Upoia, Vailala R., 15 Mar 1926, *Brass 1153* (holotype: UC!; isotype: MICH!).

Monogramma dareicarpa Hook.; Copel., *Fern Fl. Philip.* 3: 554. 1961.

M. capillaris Copel., *Philip. J. Sci.* 6C: 147. 1911.—TYPE: Negros Occidental, Mt. Canlaon, on trees, Apr 1910, *Merrill 6961* (holotype lost in 1945 at PNH; lectotype, here designated: MICH!; isotype: NY!).

Although Copeland failed to account for his name *M. capillaris* in the *Fern Flora of the Philippines*, it is precisely *M. dareicarpa* Hook., originally described from Borneo.

Prosaptia negrosensis (Copel.) Price, comb. nov. *Polypodium negrosensis* Copel., Leaf. Philip. Bot. 2: 409. 1908; *Ctenopteris negrosensis* (Copel.) Copel., Fern Fl. Philip. 3: 527. 1961.—TYPE: Negros Oriental, Cuernos Mts., 4500 ft, Jun 1908, *Elmer 10319* (holotype: MICH!).

Polypodium spongiosum Copel., Philip. J. Sci. 40: 308, pl.9. 1929; *Ctenopteris spongiosa* (Copel.) Copel., Fern Fl. Philip. 3: 527. 1961.—TYPE: Mindanao, Zamboanga del Sur, San Ramon, 1200 m, "1920," *Copeland s.n.* (holotype: MICH!; isotype: UC!).

In describing *P. spongiosum*, Copeland erred in stating that its sori are superficial, and repeated this later in the *Fern Flora of the Philippines*; an examination of the holotype reveals that its sori are sunken in deep craters, precisely as in *Prosaptia negrosensis*. This is one of the distinguishing features of *Prosaptia*, along with the ciliate paleae, usually clathrate, and the absence of hydathodes. Copeland recorded the date of collection of *P. spongiosum* as 1920, but he was in California at that time, and I believe he collected it in November of 1911. Although he stated that only a single specimen was known, there is an isotype at UC in addition to the holotype at MICH. This Philippine endemic is known from only the two type collections listed above.

Prosaptia negrosensis is most closely related to **Prosaptia barathrophylla** (Bak.) Price, comb. nov. (basonym: *Polypodium barathrophyllum* Bak., J. Bot. 29: 107. 1891) described from Sarawak, and ranging to Thailand. It was reported from the Philippines (Palawan) as *Ctenopteris khasyana* (Hook.) Dickason by Holtt., Dansk. Bot. Arkiv 25: 38. 1967, but that name, as applied to plants from Southeast Asia, was corrected to *Ctenopteris barathrophylla* by Parris, Kew Bull. 41: 498. 1986, who also attributed it to the Philippines.

Pteris opaca (Presl) J. Sm. ex Fée, Gen. Fil. 125. 1852; Copel., Fern Fl. Philip. 1: 128. 1958. *Pycnodoria opaca* Presl, Epim. Bot. 101. 1851.—TYPE: Samar? ("Cebu"), 1836–40, *Cuming 342* (isotypes: NY! SING! US!).

Pteris taenitis Copel., Philip. J. Sci. 7C: 53, pl.3. 1912; Fern Fl. Philip. 1: 129. 1958.—TYPE: Mindanao, Agusan del Norte, Mt. Hilong-hilong, Mar 1911, *Weber 1143* (holotype lost in 1945 at PNH; lectotype, here designated: MICH!).

From examination of the types above cited, and my own collection (*Price 2755*) at the type locality of *P. taenitis*, I am certain that name was based on a small precociously fertile plant of *P. opaca*.

Selliguea triloba (Houttuyn) Price, comb. nov. *Polypodium trilobum* Houttuyn, Nat. Hist. 14: 148, t.98(1). 1783. *Crypsinus trilobus* (Houttuyn) Copel.; Fern Fl. Philip. 3: 503. 1961.

S. matutumensis Copel., Philip. J. Sci. 81: 44. 1952; Fern Fl. Philip. 3: 509. 1961.—TYPE: Mindanao, Mt. Matutum, 1800 m, 1 May 1917, *Copeland s.n.* (holotype: MICH!, Herbarium Copeland sheet no. 11731).

On May 1, 1917, Copeland collected *Selliguea triloba* twice on Mt. Matutum. One collection was at 1500 m elevation and consists of plants with the trifid to pinnatifid frond form common in maturity (*Copeland s.n.*, MICH, UC). But slightly higher up the mountain, he collected a single plant with simple fronds and

this he later described as *S. matutumensis*, although it is merely a small undivided plant of *S. triloba*.

Sphaerostephanos diminutus (Copel.) Price, comb. nov. *Dryopteris diminuta* Copel., Philip. J. Sci. 40: 298. 1929. *Cyclosorus diminutus* (Copel.) Copel.; Fern Fl. Philip. 2: 359. 1960. *Pronephrium diminutum* (Copel.) Holtt.; Fl. Males. II, 1: 515. 1982.—TYPE: Mindanao, Zamboanga del Sur, San Ramon, Nov 1911, Copeland s.n. (holotype: MICH!; isotype: UC!).

Sphaerostephanos lucbanii Holtt., Fl. Males. II, 1: 463. 1982.—TYPE: Luzon, Quezon Prov., Mt. Banahaw, Lucban Cone, 11 June 1973, Price 2720A (holotype: K!).

As explained by Holttum under the description of *S. lucbanii*, it was a possibility that the tiny plants without reduced auricles at the base of the frond, *P. diminutum*, would turn out to be conspecific with the much larger plants with large pinnae and much reduced auricles, *S. lucbanii*, but it was not possible to decide confidently when they had been found in proximity only once, even though they agreed in details of hairs, glands, and sori.

In 1907 and November, 1911, Copeland made unnumbered collections from Mindanao, Zamboanga del Sur, all of the tiny plants, and described one as *Dryopteris diminuta*. In 1973, I collected both the tiny and the large form in one locality in Luzon almost 800 km to the north of Copeland's site. Finally I found another population with both forms at a location virtually exactly intermediate between the two previously known, in Panay, Antique Prov., Mt. Madyaas, Jan 1987, Price 4688, and can confirm that they are different growth forms of one species.

The two growth forms are not quite analogous to juvenile vs. adult foliage, or bathyphylls vs. acrophylls, since both produce fertile fronds and since one does not routinely develop into the other; rather, they seem to be responses to differences in microhabitat, although it is conceivable that some allelic segregation occurs and is selected for by microhabitat. There seems not to be a continuum of intermediates, although some fronds of both growth forms exhibit slight intermediate tendencies.

It is possible that additional species of *Sphaerostephanos* will prove to have *Pronephrium*-like edaphomorphs; *P. brauseanum* Holtt. of New Guinea is extremely close to *P. diminutum* and might best be combined, but a counterpart large growth form of it seems not to have been collected thus far.

Vittaria alternans Copel., Philip. J. Sci. 1 Suppl. 157. 1906; Fern Fl. Philip. 3: 549. 1961.

V. hecistophylla Copel., Philip. J. Sci. 81: 45. 1952; Fern Fl. Philip. 3: 548. 1961.—TYPE: Mindanao, Cotabato, Guinatilan, 800 m in very wet woods, Sep 1933, Copeland s.n. (holotype: MICH!).

Vittaria hecistophylla was based on a unicate gathering and is merely a very small individual of *V. alternans*, described 46 years previously also from Mindanao and also collected at 800 m elevation.

Vittaria crispomarginata Christ, Bull. Herb. Boiss. II, 6: 1007. 1906; Price, Philip. Agric. 57: 40. 1974.

V. merrillii Christ, Philip. J. Sci. 2C: 174. 1907.—TYPE: Mindanao, Davao, Mt.

Apo, 4000 ft, 27 Oct 1904, *Copeland 1516* (lectotype, here designated: MICH!; isolectotype: NY!).

Christ cited four syntypes of *V. merrillii*, *Copeland 1516* & *1192* from Mt. Apo; *Clemens 104* from Lanao, and *Merrill 4044* from Mindoro, these representing two distinct species. Christ's description best fits the two Mt. Apo collections in length of stipe, color and width of indusium, color and width of frond; and Mt. Apo was designated the type locality by Copel., *Leafl. Philip. Bot.* 3: 833. 1910. In Copeland's herbarium (MICH) all four collections are present; Copeland marked on the sheet that his *1516* should be the type collection, and I agree with that choice.

In *Fern Fl. Philip.* 3: 550. 1961, Copeland reduced *V. merrillii* to *V. zosterifolia* Willd. described from Reunión, but Willdenow's species was much longer and more slender. The earliest name I am sure applies to this species is *V. crispomarginata* Christ, wrongly referred to *V. ensiformis* Sw. in *Fern Fl. Philip.* 3: 551. 1961, a name based on a specimen from Mauritius.

Distinguishing characters of *V. crispomarginata* are: rhizome \pm long creeping, stipes \pm distinct, subterete at base, costa raised below, pale cartilaginous, indusial strips equal, pale cartilaginous, opening strictly laterally, young sterile fronds with ruffled margins.

Vittaria scolopendrina (Bory) Thwaites; Copel., *Fern Fl. Philip.* 3: 552. 1961.

V. subcoriacea Christ, *Philip. J. Sci.* 2C: 175. 1907; Copel., *Fern Fl. Philip.* 3: 550. 1961.—TYPE: Palawan, Victoria Peak, 1100 m, Mar 1906, *Foxworthy BS 669* (isotypes: MICH! NY!).

The specimens described as *V. subcoriacea* are merely poorly pressed fronds, perhaps collected when dehydrated and with margins revolutely inrolled, of *V. scolopendrina*, which seems not to have been otherwise reported from Palawan.